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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| EXAMINER | |
|---|---|
| GANDHI, DIPAKKUMAR B | |
| **ART UNIT** | **PAPER NUMBER** |
| 2133 | |

DATE MAILED: 09/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) |
|---|---|---|
| | 10/062,306 | LAU ET AL. |
| | **Examiner** | **Art Unit** |
| | Dipakkumar Gandhi | 2133 |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *07 May 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-55* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-55* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 May 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 11, 12 are rejected under 35 U.S.C. 102(e) as being anticipated by Jefferey et al. (US 2002/0188668 A1).

Jefferey et al. anticipate claim 1.

Jefferey et al. teach a High-speed Digital Subscriber Line (HDSL) communication device, comprising: a HDSL communication interface; an upstream communication interface; a communication circuit coupled to the HDSL communication interface and the upstream communication interface; a bit error rate test (BERT) circuit coupled to the communication circuit; and a processor coupled to the communication circuit and the BERT circuit, wherein the processor commands the BERT circuit to initiate a bit error rate (BER) test (figure 3, page 1, paragraph 2, page 8, paragraphs 72-73, Jefferey et al.).

- Jefferey et al. anticipate claim 11.

Jefferey et al. teach that the BER test is initiated on the HDSL communication interface (page 8, paragraph 72, Jefferey et al.).

- Jefferey et al. anticipate claim 12.

Jefferey et al. teach that the BER test is initiated on the upstream communication interface (page 8, paragraph 73, Jefferey et al.).

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 2-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jefferey et al. (US 2002/0188668 A1) as applied to claim 1 above, and further in view of Kaewell, Jr. et al. (US 5,448,616).

As per claim 2, Jefferey et al. substantially teach the claimed invention described in claim 1 (as rejected above).

However Jefferey et al. do not explicitly teach the specific use of a machine-usable storage media coupled to the processor, where the processor utilizes BER firmware stored on the machine-usable storage media to operate the BERT circuit.

Kaewell, Jr. et al. in an analogous art teach that the state diagram for the process of the Tx_DSP 15 is shown in FIG. 4. Once the SPM controller 16 puts the Tx_DSP 15 into the FSK BER test mode, the Tx_DSP 15 starts to assemble and create the FSK BER modulation (figure 4, col. 3, lines 51-55, Kaewell, Jr. et al.). Kaewell, Jr. et al. also teach that the Rx_DSP FSK BER test firmware logic is shown in the state diagram of FIG. 5 (figure 5, col. 4, lines 5-6, Kaewell, Jr. et al.).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made to modify Jefferey et al.'s patent with the teachings of Kaewell, Jr. et al. by including an additional

step of using a machine-usable storage media coupled to the processor, where the processor utilizes BER firmware stored on the machine-usable storage media to operate the BERT circuit.

This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that it would provide the opportunity to conduct different BER tests based on the firmware for BER tests.

- As per claim 3, Jefferey et al. and Kaewell, Jr. et al. teach the additional limitations.

Kaewell, Jr. et al. craft port coupled to the processor, wherein a BER test is initiated by the processor by a command from the craft port (SPM controller 16, Ethernet, Maint. Port in figure 1, col. 3, lines 34-35, Kaewell, Jr. et al.).

6. Claims 4, 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jefferey et al. (US 2002/0188668 A1) as applied to claim 1 above, and further in view of Bremer et al. (US 6,647,058 B1).

As per claim 4, Jefferey et al. substantially teach the claimed invention described in claim 1 (as rejected above).

However Jefferey et al. do not explicitly teach the specific use of the HDSL communication interface containing an embedded operation channel (EOC), such that command signals may be expressed on the EOC by the HDSL communication device.

Bremer et al. in an analogous art teach that in the preferred embodiment, embedded operational channel 56 (EOC) will be used instead. EOC 56 provides a low speed secondary channel on xDSL 16 that allows the aforementioned methods to be practiced simultaneously with ongoing data transmission (figure 2, col. 7, lines 50-55, Bremer et al.).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made to modify Jefferey et al.'s patent with the teachings of Bremer et al. by including an additional step of using the HDSL communication interface containing an embedded operation channel (EOC), such that command signals may be expressed on the EOC by the HDSL communication device.

This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that using the HDSL communication interface containing an embedded operation channel (EOC), such that command signals may be

expressed on the EOC by the HDSL communication device would provide the opportunity to send commands to receiving communication device with ongoing data transmission.

- As per claim 6, Jefferey et al. and Bremer et al. teach the additional limitations.

Bremer et al. teach that the upstream communication interface contains an embedded operation channel (EOC), such that command signals may be expressed on the EOC by the HDSL communication device (figure 2, col. 7, lines 50-55, Bremer et al.).

7. Claims 5, 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jefferey et al. (US 2002/0188668 A1) and Bremer et al. (US 6,647,058 B1) as applied to claim 4 and 6 above, and further in view of Lee (US 2002/0141445 A1).

As per claim 5, Jefferey et al. and Bremer et al. substantially teach the claimed invention described in claim 4 (as rejected above).

However Jefferey et al. and Bremer et al. do not explicitly teach specifically that the EOC command signal is a loop back configuration command signal.

Lee in an analogous art teaches that a specific loop back connection is described for testing purposes, for example. A node, such as node 125, may request to test characteristics of the system. The test can be carried out by sending a message to a specified location, along with a command that some response to be sent back. This is conventionally called loop back. According to this system, a loop back command is sent with an indication that it is priority UBR data (page 3, paragraphs 43, 45, Lee).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made to modify Jefferey et al.'s patent with the teachings of Lee by including an additional step of using the EOC command signal as a loop back configuration command signal.

This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that using the EOC command signal as a loop back configuration command signal would provide the opportunity to conduct tests where the data sent to the receiving device is sent back to the transmitting device.

- As per claim 7, Jefferey et al., Bremer et al. and Lee teach the additional limitations.

Lee teaches that the EOC command is a loop back configuration command (page 3, paragraphs 43, 45, Lee).

8. Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jefferey et al. (US 2002/0188668 A1) as applied to claim 1 above, and further in view of Appleton et al. (US 6,628,621 B1).

As per claim 8, Jefferey et al. substantially teach the claimed invention described in claim 1 (as rejected above).

However Jefferey et al. do not explicitly teach the specific use of the communication link coupled to a T1 communication interface of the HDSL communication device.

Appleton et al. in an analogous art teach that FIG. 3 diagrammatically illustrates a conventional BERT device coupled over a T1 interface with a multi-unit channel bank (figure 3, col. 4, lines 30-32, Appleton et al.).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made to modify Jefferey et al.'s patent with the teachings of Appleton et al. by including an additional step of using the communication link coupled to a T1 communication interface of the HDSL communication device.

This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that using the communication link coupled to a T1 communication interface of the HDSL communication device would provide the opportunity to transmit and receive data on the T1 communication link and conduct bit error rate tests.

- As per claim 9, Jefferey et al. and Appleton et al. teach the additional limitations.

Appleton et al. teach that a test pattern is generated and compared by the bit error rate test (BERT) circuit coupled to the HDSL communication device (col. 4, lines 6-13, Appleton et al.).

9. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jefferey et al. (US 2002/0188668 A1) as applied to claim 1 above, and further in view of Stenard (US 5,136,617) and McWilliams (US 2002/0009089 A1).

As per claim 10, Jefferey et al. substantially teach the claimed invention described in claim 1 (as rejected above).

However Jefferey et al. do not explicitly teach specifically a digital signal 1 (DS1) loss.
Stenard in an analogous art teaches that a red-alarm.sub.-- near indicator is active when the signal loss persists for more than two-and-a-half seconds or, on average, two out of five DS1 frames have been found to be in framing error for at least two-and-a-half seconds (col. 3, lines 24-28, Stenard).
Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made to modify Jefferey et al.'s patent with the teachings of Stenard by including additionally a digital signal 1 (DS1) loss.
This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that it would provide the opportunity to determine the steps to be taken during bit error rate testing when DS1 loss occurs.
Jefferey et al. also do not explicitly teach specifically that an event error is masked by the device.
McWilliams in an analogous art teaches that in addition to an 8-bit address and 8-bit data bus plus the associated bus protocol control signals, the CPU interface 115 includes an open-drain interrupt signal. This signal may be asserted on the detection of various alarms within the device, e.g. excessive HEC errors, ECC buffer fall/empty, loss of lock etc. Any of the potential internal sources of this interrupt may be individually inhibited via an interrupt mask (page 10, paragraph 254, McWilliams).
Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made to modify Jefferey et al.'s patent with the teachings of McWilliams by including additionally that an event error is masked by the device.
This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that masking an event error by the device would provide the opportunity to conduct bit error rate tests without interrupts caused by other error events.

10. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Seaholtz et al. (US 6,424,636 B1) in view of Jefferey et al. (US 2002/0188668 A1) and McWilliams (US 2002/0009089 A1).
As per claim 13, Seaholtz et al. teach a communication system, comprising: a first and a second High-speed Digital Subscriber Line (HDSL) communication device, each HDSL communication device having a

HDSL interface and at least one other communication interface; a HDSL communication link coupled to the HDSL interface of the first HDSL communication device and to the HDSL interface of the second HDSL communication device (figure 7, col. 1, line 66 – col. 2, line 3, col. 11, lines 1-2, col. 23, lines 45-57, Seaholtz et al.) ,

However Seaholtz et al. do not explicitly teach specifically that the first HDSL communication device initiates a bit error rate (BER) test on the HDSL communication link.

Jefferey et al. in an analogous art teaches high-speed data services such as Digital Subscriber Line ("DSL") service, and its variations such as ADSL, HDSL, SDSL, VDSL etc. (referred to herein collectively as "xDSL" or simply "DSL"). Jefferey et al. also teach that a BERT 50 can also be disposed at the telephone company central office, for example integrated into the DSL rack 20, and a test signal generator 52 can be disposed at the subscriber site, for example integrated into the communications interface 32, to test sweep the upstream signal from the subscriber to the DSL rack 20 in the same fashion (page 8, paragraph 73, Jefferey et al.).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made to modify Seaholtz et al.'s patent with the teachings Jefferey et al. by including additionally that the first HDSL communication device initiates a bit error rate (BER) test on the HDSL communication link. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that the first HDSL communication device initiating a bit error rate (BER) test on the HDSL communication link would provide the opportunity to determine the quality of the service of the HDSL communication link by measuring the number of bits received with errors by the HDSL communication device.

Seaholtz et al. also do not explicitly teach the specific use of locally masking all alarms until the BER test is complete.

However McWilliams in an analogous art teaches that in addition to an 8-bit address and 8-bit data bus plus the associated bus protocol control signals, the CPU interface 115 includes an open-drain interrupt signal. This signal may be asserted on the detection of various alarms within the device, e.g. excessive

HEC errors, ECC buffer fall/empty, loss of lock etc. Any of the potential internal sources of this interrupt may be individually inhibited via an interrupt mask (page 10, paragraph 254, McWilliams).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made to modify Seaholtz et al.'s patent with the teachings of McWilliams by including an additional step of locally masking all alarms until the BER test is complete.

This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that locally masking all alarms until the BER test is complete would provide the opportunity to conduct bit error rate tests without interrupts caused by other error events.

11. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Seaholtz et al. (US 6,424,636 B1), Jefferey et al. (US 2002/0188668 A1) and McWilliams (US 2002/0009089 A1) as applied to claim 13 above, and further in view of Lee (US 2002/0141445 A1).

As per claim 14, Seaholtz et al., Jefferey et al. and McWilliams substantially teach the claimed invention described in claim 13 (as rejected above).

However Seaholtz et al., Jefferey et al. and McWilliams do not explicitly teach the specific use of the first HDSL communication device expressing a loop back command signal on the HDSL communication link.

Lee in an analogous art teaches that a specific loop back connection is described for testing purposes, for example. A node, such as node 125, may request to test characteristics of the system. The test can be carried out by sending a message to a specified location, along with a command that some response be sent back. This is conventionally called loop back. According to this system, a loop back command is sent with an indication that it is priority UBR data (page 3, paragraph 43, 45, Lee).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made to modify Seaholtz et al.'s patent with the teachings of Lee by including an additional step of using the first HDSL communication device expressing a loop back command signal on the HDSL communication link.

This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that using the first HDSL

communication device expressing a loop back command signal on the HDSL communication link would provide the opportunity to instruct the HDSL device at the receiver to send the transmitted data back for analysis.

12. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Seaholtz et al. (US 6,424,636 B1), Jefferey et al. (US 2002/0188668 A1) and McWilliams (US 2002/0009089 A1) as applied to claim 13 above, and further in view of Kaewell, Jr. et al. (US 5,448,616).

As per claim 15, Seaholtz et al., Jefferey et al. and McWilliams substantially teach the claimed invention described in claim 13 (as rejected above).

However Seaholtz et al., Jefferey et al. and McWilliams do not explicitly teach the specific use a machine usable storage media coupled to a processor, where the processor controls BER test with firmware from the machine usable storage media.

Kaewell, Jr. et al. in an analogous art teach that the state diagram for the process of the Tx_DSP 15 is shown in FIG. 4. Once the SPM controller 16 puts the Tx_DSP 15 into the FSK BER test mode, the Tx_DSP 15 starts to assemble and create the FSK BER modulation (figure 4, col. 3, lines 51-55, Kaewell, Jr. et al.). Kaewell, Jr. et al. also teach that the Rx_DSP FSK BER test firmware logic is shown in the state diagram of FIG. 5 (figure 5, col. 4, lines 5-6, Kaewell, Jr. et al.).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made to modify Seaholtz et al.'s patent with the teachings of Kaewell, Jr. et al. by including an additional step of using a machine usable storage media coupled to a processor, where the processor controls BER test with firmware from the machine usable storage media.

This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that it would provide the opportunity to conduct different BER tests based on the firmware for BER tests.

13. Claims 16, 20, 22, 27, 29, 34, 35, 36, 38, 44, 46, 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Appleton et al. (US 6,628,621 B1) in view of McWilliams (US 2002/0009089 A1).

As per claim 16, Appleton et al. teach a method of operating a communications system, comprising: initializing a Bit Error Rate (BER) test across a communication link (col. 1, lines 7-9, Appleton et al.)

coupled between a first and a second High-speed Digital Subscriber Line (HDSL) communication device (col. 1, lines 46-48, Appleton et al.); sending a test pattern signal through the communication link from the first HDSL communication device to the second HDSL communication device; receiving a return signal from the second HDSL communication device at the first HDSL communication device; and comparing the test pattern signal with the received return signal on the first HDSL communication device to determine a bit error rate (col. 10, lines 3-13, lines 24-38, Appleton et al.).

However Appleton et al. do not explicitly teach the specific use of masking errors locally in the first HDSL communications device until completion of the BER test.

McWilliams in an analogous art teaches that in addition to an 8-bit address and 8-bit data bus plus the associated bus protocol control signals, the CPU interface 115 includes an open-drain interrupt signal. This signal may be asserted on the detection of various alarms within the device, e.g. excessive HEC errors, ECC buffer fall/empty, loss of lock etc. Any of the potential internal sources of this interrupt may be individually inhibited via an interrupt mask (page 10, paragraph 254, McWilliams).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made to modify Appleton et al.'s patent with the teachings of McWilliams by including additionally masking errors locally in the first HDSL communications device until completion of the BER test.

This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that masking errors locally in the first HDSL communications device until completion of the BER test would provide the opportunity to conduct bit error rate tests without interrupts caused by other error events.

- As per claim 20, Appleton et al. and McWilliams teach the additional limitations.

Appleton et al. teach the method, wherein the test pattern is generated and compared by an integrated bit error rate test (BERT) circuit coupled to the first HDSL communication device (col. 10, lines 24-38, Appleton et al.).

- As per claim 22, Appleton et al. and McWilliams teach the additional limitations.

Appleton et al. teach a method of operating a communications system, comprising: initializing a

Bit Error Rate (BER) test across a communication link (col. 1, lines 7-9, Appleton et al.) coupled between a first and a second High-speed Digital Subscriber Line (HDSL) communication device (col. 1, lines 46-48, Appleton et al.); sending a test pattern signal through the communication link from the first HDSL communication device to the second HDSL communication device; receiving a return signal from the second HDSL communication device to the first HDSL communication device; comparing the test pattern signal with the received return signal on the first HDSL communication device to determine a bit error rate (col. 10, lines 3-13, lines 24-38, Appleton et al.).

McWilliams teaches masking errors at the second HDSL communications device until completion of the BER test (page 10, paragraph 254, McWilliams).

- As per claim 27, Appleton et al. and McWilliams teach the additional limitations.

Appleton et al. teach the method, wherein the test pattern is generated and compared by an integrated bit error rate test (BERT) circuit coupled to the first HDSL communication device (col. 10, lines 25-38, Appleton et al.).

- As per claim 29, Appleton et al. and McWilliams teach the additional limitations.

Appleton et al. teach a method of operating a High-speed Digital Subscriber Line (HDSL) communication device, comprising: initializing a Bit Error Rate (BER) test across a communication link coupled to the HDSL communication device (col. 1, lines 7-9, lines 46-48, Appleton et al.); sending a test pattern signal though the communication link; receiving a return signal and comparing the test pattern signal with the received return signal to determine a bit error rate (col. 10, lines 3-13, lines 24-38, Appleton et al.).

McWilliams teaches masking errors locally in the HDSL communications device until completion of the BER test (page 10, paragraph 254, McWilliams).

- As per claim 34, Appleton et al. and McWilliams teach the additional limitations.

Appleton et al. teach the method, wherein the communication link is coupled to a HDSL communication interface of the HDSL communication device (col. 1, lines 46-48, Appleton et al.).

- As per claim 35, Appleton et al. and McWilliams teach the additional limitations.

Appleton et al. teach the method, wherein the communication link is coupled to a T1 communication interface of the HDSL communication device (figure 3, col. 4, lines 30-32, Appleton et al.).

- As per claim 36, Appleton et al. and McWilliams teach the additional limitations.

Appleton et al. teach the method wherein the test pattern is generated and compared by an integrated bit error rate test (BERT) circuit coupled to the HDSL communication device (col. 10, lines 25-38, Appleton et al.).

- As per claim 38, Appleton et al. and McWilliams teach the additional limitations.

Appleton et al. teach a method of operating a High-speed Digital Subscriber Line (HDSL) communication device, comprising: initializing a Bit Error Rate (BER) test across a communication link coupled to the HDSL communication device to a second HDSL communications device (col. 1, lines 7-9, lines 46-48, Appleton et al.); sending a test pattern signal though the communication link; receiving a return signal; comparing the test pattern signal with received return signal to determine a bit error rate (col. 10, lines 3-13, lines 24-38, Appleton et al.).

McWilliams teaches masking errors in the second HDSL communications device until completion of the BER test (page 10, paragraph 254, McWilliams).

- As per claim 44, Appleton et al. and McWilliams teach the additional limitations.

Appleton et al. teach the method wherein the test pattern is generated and compared by an integrated bit error rate test (BERT) circuit coupled to the HDSL communication device (col. 10, lines 25-38, Appleton et al.).

- As per claim 46, Appleton et al. and McWilliams teach the additional limitations.

Appleton et al. teach a method of operating a communication device, comprising: initializing a Bit Error Rate (BER) test across a communication link coupled to the communication device (col. 1, lines 7-9, Appleton et al.); sending a test pattern signal though the communication link; receiving a return signal; comparing the test pattern signal with received return signal to determine a bit error rate (col. 10, lines 3-13, lines 24-38, Appleton et al.).

McWilliams teaches masking errors locally in the communications device until completion of the BER test (page 10, paragraph 254, McWilliams).

- As per claim 51, Appleton et al. and McWilliams teach the additional limitations.

Appleton et al. teach a method of operating a communication device, comprising: initializing a

Bit Error Rate (BER) test across a communication link coupled to the communication device to a second communications device (col. 1, lines 7-9, Appleton et al.); sending a test pattern signal though the communication link; receiving a return signal; comparing the test pattern signal with received return signal to determine a bit error rate (col. 10, lines 3-13, lines 24-38, Appleton et al.).

McWilliams teaches masking errors in the second communications device until completion of the BER test (page 10, paragraph 254, McWilliams).

14. Claims 17, 30, 31, 47, 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Appleton et al. (US 6,628,621 B1) and McWilliams (US 2002/0009089 A1) as applied to claim 16, 29, 46 above, and further in view of Lee (US 2002/0141445 A1).

As per claim 17, Appleton et al. and McWilliams substantially teach the claimed invention described in claim 16 (as rejected above).

However Appleton et al. and McWilliams do not explicitly teach the specific use of setting the second HDSL communication device into loop back mode.

Lee in an analogous art teaches that a specific loop back connection is described for testing purposes, for example. A node, such as node 125, may request to test characteristics of the system. The test can be carried out by sending a message to a specified location, along with a command that some response be sent back. This is conventionally called loop back. According to this system, a loop back command is sent with an indication that it is priority UBR data (page 3, paragraph 43, 45, Lee).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made to modify Appleton et al.'s patent with the teachings of Lee by including an additional step of setting the second HDSL communication device into loop back mode.

This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that setting the second HDSL communication device into loop back mode would provide the opportunity to instruct the HDSL device at the receiver to send the transmitted data back for analysis.

- As per claim 30, Appleton et al., McWilliams and Lee teach the additional limitations.

Lee teaches the method further comprising: setting a second communication device that is coupled to the communication link into loopback mode (page 3, paragraph 43, 45, Lee).

- As per claim 31, Appleton et al., McWilliams and Lee teach the additional limitations.

Appleton et al. teach the method, wherein the second communication device is a HDSL communication device (col. 1, lines 46-48, Appleton et al.).

- As per claim 47, Appleton et al., McWilliams and Lee teach the additional limitations.

Lee teaches the method further comprising: setting a second communication device that is coupled to the communication link into loopback mode (page 3, paragraph 43, 45, Lee).

- As per claim 48, Appleton et al., McWilliams and Lee teach the additional limitations.

Appleton et al. teach the method, wherein the second communication device is a HDSL communication device (col. 1, lines 46-48, Appleton et al.).

15. Claims 18, 23, 24, 25, 32, 40, 49, 50, 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Appleton et al. (US 6,628,621 B1) and McWilliams (US 2002/0009089 A1) as applied to claim 16, 22, 29, 38, 46, 51 above, and further in view of Bremer et al. (US 6,647,058 B1) and Lee (US 2002/0141445 A1).

As per claim 18, Appleton et al. and McWilliams substantially teach the claimed invention described in claim 16 (as rejected above).

However Appleton et al. and McWilliams do not explicitly teach the specific use of an embedded operation channel (EOC).

Bremer et al. in an analogous art teach that in the preferred embodiment, embedded operational channel 56 (EOC) will be used instead. EOC 56 provides a low speed secondary channel on xDSL 16 that allows the aforementioned methods to be practiced simultaneously with ongoing data transmission (figure 2, col. 7, lines 50-55, Bremer et al.).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made to modify Appleton et al.'s patent with the teachings of Bremer et al. by including an additional step of using an embedded operation channel (EOC).

This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that using an embedded operation channel (EOC) would provide the opportunity to send commands to receiving communication device with ongoing data transmission.

Appleton et al. and McWilliams also do not explicitly teach the specific use of sending a loopback configuration command to the second HDSL communications device.

However Lee in an analogous art teaches that a specific loop back connection is described for testing purposes, for example. A node, such as node 125, may request to test characteristics of the system. The test can be carried out by sending a message to a specified location, along with a command that some response be sent back. This is conventionally called loop back. According to this system, a loop back command is sent with an indication that it is priority UBR data (page 3, paragraphs 43, 45, Lee).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made to modify Appleton et al.'s patent with the teachings of Lee by including an additional step of sending a loopback configuration command to the second HDSL communications device.

This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that sending a loopback configuration command to the second HDSL communications device would provide the opportunity to conduct tests where the data sent to the receiving device is sent back to the transmitting device.

- As per claim 23, Appleton et al., McWilliams, Bremer et al. and Lee teach the additional limitations.

Lee teaches sending a loopback configuration command to the second HDSL communications device (page 3, paragraph 43, 45, Lee).

Bremer et al. teach an embedded operation channel (EOC), (figure 2, col. 7, lines 50-55, Bremer et al.).

- As per claim 24, Appleton et al., McWilliams, Bremer et al. and Lee teach the additional limitations.

Bremer et al. teach the method, wherein the EOC command is to the second HDSL communications device (figure 2, col. 7, lines 50-55, Bremer et al.).

McWilliams teaches is an error mask command (page 10, paragraph 254, McWilliams).

- As per claim 25, Appleton et al., McWilliams, Bremer et al. and Lee teach the additional limitations.

Bremer et al. teach the method, wherein the EOC command is to the second HDSL communications device (figure 2, col. 7, lines 50-55, Bremer et al.).

McWilliams teaches is an alarm mask command (page 10, paragraph 254, McWilliams).

- As per claim 32, Appleton et al., McWilliams, Bremer et al. and Lee teach the additional limitations.

Lee teaches sending a loopback configuration command to the second communications device (page 3, paragraphs 43, 45, Lee).

Bremer et al. teach an embedded operation channel (EOC), (figure 2, col. 7, lines 50-55, Bremer et al.).

- As per claim 40, Appleton et al., McWilliams, Bremer et al. and Lee teach the additional limitations.

Bremer et al. teach the EOC command to the second HDSL communications device (figure 2, col. 7, lines 50-55, Bremer et al.).

Lee teaches a loopback configuration command (page 3, paragraphs 43, 45, Lee).

- As per claim 49, Appleton et al., McWilliams, Bremer et al. and Lee teach the additional limitations.

Bremer et al. teach the method further comprising: sending a command to the second communications device over an embedded operation channel (EOC), (figure 2, col. 7, lines 50-55, Bremer et al.).

- As per claim 50, Appleton et al., McWilliams, Bremer et al. and Lee teach the additional limitations.

Bremer et al. teach the EOC command to the second communications device (figure 2, col. 7, lines 50-55, Bremer et al.).

Lee teaches a loopback configuration command (page 3, paragraphs 43, 45, Lee).

- As per claim 53, Appleton et al., McWilliams, Bremer et al. and Lee teach the additional limitations.

Bremer et al. teach the EOC command to the second communications device (figure 2, col. 7, lines 50-55, Bremer et al.).

Lee teaches a loopback configuration command (page 3, paragraphs 43, 45, Lee).

16. Claims 19, 26, 33, 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Appleton et al. (US 6,628,621 B1) and McWilliams (US 2002/0009089 A1) as applied to claim 16, 22, 29, 38 above, and further in view of Kaewell, Jr. et al. (US 5,448,616).

As per claim 19, Appleton et al. and McWilliams substantially teach the claimed invention described in claim 16 (as rejected above).

However Appleton et al. and McWilliams do not explicitly teach the specific use of the method, wherein BER routines are stored on a machine-readable storage medium coupled to the first HDSL communication device.

Kaewell, Jr. et al. in an analogous art teach that the state diagram for the process of the Tx_DSP 15 is shown in FIG. 4. Once the SPM controller 16 puts the Tx_DSP 15 into the FSK BER test mode, the Tx_DSP 15 starts to assemble and create the FSK BER modulation (figure 4, col. 3, lines 51-55, Kaewell, Jr. et al.). Kaewell, Jr. et al. also teach that the Rx_DSP FSK BER test firmware logic is shown in the state diagram of FIG. 5 (figure 5, col. 4, lines 5-6, Kaewell, Jr. et al.).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made to modify Appleton et al.'s patent with the teachings of Kaewell, Jr. et al. by including an additional step of using the method, wherein BER routines are stored on a machine-readable storage medium coupled to the first HDSL communication device.

This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that it would provide the opportunity to conduct different BER tests based on the firmware for BER tests.

- As per claim 26, Appleton et al., McWilliams and Kaewell, Jr. et al. teach the additional limitations.

Kaewell, Jr. et al. teach the method, wherein BER routines are stored on a machine readable storage medium coupled to the first HDSL communication device (figure 4, figure 5, col. 3, lines 51-55, col. 4, lines 5-6, Kaewell, Jr. et al.).

- As per claim 33, Appleton et al., McWilliams and Kaewell, Jr. et al. teach the additional limitations.

Kaewell, Jr. et al. teach the method, wherein BER routines are stored on a machine readable storage medium coupled to the HDSL communication device (figure 4, figure 5, col. 3, lines 51-55, col. 4, lines 5-6, Kaewell, Jr. et al.).

- As per claim 43, Appleton et al., McWilliams and Kaewell, Jr. et al. teach the additional limitations.

Kaewell, Jr. et al. teach the method, wherein BER routines are stored on a machine readable storage medium coupled to the HDSL communication device (figure 4, figure 5, col. 3, lines 51-55, col. 4, lines 5-6, Kaewell, Jr. et al.).

17. Claims 21, 28, 37, 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Appleton et al. (US 6,628,621 B1) and McWilliams (US 2002/0009089 A1) as applied to claim 16, 22, 29, 38 above, and further in view of Stenard (US 5,136,617).

As per claim 21, Appleton et al. and McWilliams substantially teach the claimed invention described in claim 16 (as rejected above). McWilliams also teaches that an event error is masked by the device (page 10, paragraph 254, McWilliams).

However Appleton et al. and McWilliams do not explicitly teach specifically a digital signal 1 (DS1) loss. Stenard in an analogous art teaches that a red-alarm.sub.-- near indicator is active when the signal loss persists for more than two-and-a-half seconds or, on average, two out of five DS1 frames have been found to be in framing error for at least two-and-a-half seconds (col. 3, lines 24-28, Stenard).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made to modify Appleton et al.'s patent with the teachings of Stenard by including additionally a digital signal 1 (DS1) loss.

This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that considering a digital signal 1 (DS1) loss would provide the opportunity to determine the steps to be taken during bit error rate testing when DS1 loss occurs.

- As per claim 28, Appleton et al., McWilliams and Stenard teach the additional limitations.

McWilliams teaches that an event error is masked by the device (page 10, paragraph 254, McWilliams). Stenard teaches a DS1 loss event (col. 3, lines 24-28, Stenard).

- As per claim 37, Appleton et al., McWilliams and Stenard teach the additional limitations.

McWilliams teaches that an event error is masked by the device (page 10, paragraph 254, McWilliams). Stenard teaches a DS1 loss event (col. 3, lines 24-28, Stenard).

- As per claim 45, Appleton et al., McWilliams and Stenard teach the additional limitations.

McWilliams teaches that an event error is masked by the second HDSL communication device (page 10, paragraph 254, McWilliams).

Stenard teaches a DS1 loss event (col. 3, lines 24-28, Stenard).

18. Claims 39, 41, 42, 52, 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Appleton et al. (US 6,628,621 B1) and McWilliams (US 2002/0009089 A1) as applied to claim 38 above, and further in view of Bremer et al. (US 6,647,058 B1).

As per claim 39, Appleton et al. and McWilliams substantially teach the claimed invention described in claim 38 (as rejected above).

However Appleton et al. and McWilliams do not explicitly teach the specific use of expressing a command on an embedded operation channel (EOC) to the second HDSL communications device.

Bremer et al. in an analogous art teach that in the preferred embodiment, embedded operational channel 56 (EOC) will be used instead. EOC 56 provides a low speed secondary channel on xDSL 16 that allows the aforementioned methods to be practiced simultaneously with ongoing data transmission (figure 2, col. 7, lines 50-55, Bremer et al.).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made to modify Appleton et al.'s patent with the teachings of Bremer et al. by including an additional step

of expressing a command on an embedded operation channel (EOC) to the second HDSL communications device.

This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that expressing a command on an embedded operation channel (EOC) to the second HDSL communications device would provide the opportunity to send commands to receiving communication device with ongoing data transmission.

- As per claim 41, Appleton et al., McWilliams and Bremer et al. teach the additional limitations.

Bremer et al. teach the method, wherein the EOC command is to the second HDSL communications device (figure 2, col. 7, lines 50-55, Bremer et al.).

McWilliams teaches is an error mask command (page 10, paragraph 254, McWilliams).

- As per claim 42, Appleton et al., McWilliams and Bremer et al. teach the additional limitations.

Bremer et al. teach the method, wherein the EOC command is to the second HDSL communications device (figure 2, col. 7, lines 50-55, Bremer et al.).

McWilliams teaches is an alarm mask command (page 10, paragraph 254, McWilliams).

- As per claim 52, Appleton et al., McWilliams and Bremer et al. teach the additional limitations.

Bremer et al. teach the method, further comprising: sending a command to the second communications device over an embedded operation channel (EOC), (figure 2, col. 7, lines 50-55, Bremer et al.).

- As per claim 54, Appleton et al., McWilliams and Bremer et al. teach the additional limitations.

Bremer et al. teach the method, wherein the EOC command is to the second communications device (figure 2, col. 7, lines 50-55, Bremer et al.).

McWilliams teaches is an error mask command (page 10, paragraph 254, McWilliams).

19. Claim 55 is rejected under 35 U.S.C. 103(a) as being unpatentable over Appleton et al. (US 6,628,621 B1) in view of McWilliams (US 2002/0009089 A1) and Kaewell, Jr. et al. (US 5,448,616).

As per claim 55, Appleton et al. (US 6,628,621 B1) teaches initializing a Bit Error Rate (BER) test across a communication link coupled to the communication device (col. 1, lines 7-9, Appleton et al.); sending a test pattern signal though the communication link; receiving a return signal and comparing the test pattern

signal with received return signal to determine a bit error rate (col. 10, lines 3-13, lines 24-38, Appleton et al.).

However Appleton et al. do not explicitly teach the specific use of masking errors locally in the communications device until completion of the BER test.

McWilliams in an analogous art teaches that in addition to an 8-bit address and 8-bit data bus plus the associated bus protocol control signals, the CPU interface 115 includes an open-drain interrupt signal. This signal may be asserted on the detection of various alarms within the device, e.g. excessive HEC errors, ECC buffer fall/empty, loss of lock etc. Any of the potential internal sources of this interrupt may be individually inhibited via an interrupt mask (page 10, paragraph 254, McWilliams).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made to modify Appleton et al.'s patent with the teachings of McWilliams by including an additional step of masking errors locally in the communications device until completion of the BER test.

This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that masking errors locally in the communications device until completion of the BER test would provide the opportunity to conduct bit error rate tests without interrupts caused by other error events.

Appleton et al. also do not explicitly teach the specific use of a machine-usable medium having machine-readable instructions stored thereon for execution by a processor of a communication device to perform a method.

However Kaewell, Jr. et al. in an analogous art teach that the state diagram for the process of the Tx_DSP 15 is shown in FIG. 4. Once the SPM controller 16 puts the Tx_DSP 15 into the FSK BER test mode, the Tx_DSP 15 starts to assemble and create the FSK BER modulation (figure 4, col. 3, lines 51-55, Kaewell, Jr. et al.). Kaewell, Jr. et al. also teach that the Rx_DSP FSK BER test firmware logic is shown in the state diagram of FIG. 5 (figure 5, col. 4, lines 5-6, Kaewell, Jr. et al.).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made to modify Appleton et al.'s patent with the teachings of Kaewell, Jr. et al. by including an additional

step of using a machine-usable medium having machine-readable instructions stored thereon for execution by a processor of a communication device to perform a method.

This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that it would provide the opportunity to conduct different BER tests based on the firmware for BER tests.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dipakkumar Gandhi whose telephone number is 703-305-7853. The examiner can normally be reached on 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on (703) 305-9595. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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